

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit, the voltage regulator ~~configured to clamp either the test supply voltage or the operational supply voltage and~~ comprising a switching device configured to bypass at least one diode responsive to the clamping threshold of the clamp circuit and to the operational or test supply voltage, such that the switching device is configured to generate a first control signal ~~responsive to the clamping threshold of the clamp circuit;~~

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the control circuit, the charge pump generating the test supply voltage; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is activated following the certification of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices of the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the operational supply voltage.

2. (Currently Amended) The device of Claim 1, wherein the plurality of voltage regulation devices comprise a plurality of diodes.

3. (Currently Amended) The device of Claim 2, wherein the a plurality of diodes are implemented through transistors.

4. (Currently Amended) A device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit, the voltage regulator configured to clamp either the test supply voltage or the operational supply voltage and comprising a switching device configured to bypass at least one diode responsive to the clamping threshold of the clamp circuit and to the operational or test supply voltage, such that the switching device is configured to generate a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the control circuit, the charge pump generating the test supply voltage; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, the bypass device comprising a fuse in series with a transistor, wherein the at least one bypass device is activated following the certification of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices of the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the operational supply voltage.

5. (Currently Amended) The device of Claim 4, wherein the bypass device is activated by blowing the fuse.

6. (Previously Presented) The device of Claim 4, wherein the value of the operational supply voltage is reduced for each voltage regulation device bypassed.

7. (Previously Presented) The device of Claim 4, wherein the voltage regulation devices limit the maximum voltage output of the clamp circuit.

8. (Previously Presented) The device of Claim 4, wherein the first control signal reduces the test supply voltage when the voltage regulation devices limit the output of the clamp circuit.

9. (Previously Presented) The device of Claim 4, wherein the third control signal reduces the operational supply voltage when the non-bypassed voltage regulation devices limit the output of the clamp circuit.

10. (Currently Amended) A device which provides a test supply voltage during manufacturing and testing of a semiconductor device and an operational supply voltage after certification of the semiconductor device, the operational supply voltage being lower than the test supply voltage, the device comprising:

means for controlling an output of a clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a maximum;

~~means for using a voltage regulator to clamp either the test supply voltage or the operational supply voltage;~~

means for generating a first control signal based upon the output of the clamp circuit, the means for generating comprising switching means configured to bypass at least one diode responsive to the output of the clamp circuit and to the operational or test supply voltage;

means for generating a second control signal responsive to the first control signal;

means for generating the test supply voltage responsive to the second control signal;

means for limiting the output of the clamp circuit;

means for generating a third control signal based upon the limited output of the clamp circuit; and

means for generating the operational supply voltage.

11. (Currently Amended) The device of Claim 10, wherein the means for controlling the output of the clamp circuit comprise a plurality of diodes.

12. (Currently Amended) The device of Claim 11, wherein the a plurality of diodes are implemented through transistors.

13. (Previously Presented) The device of Claim 10, wherein the means for limiting the output of the clamp circuit comprise a fuse.

14. (Previously Presented) The device of Claim 10, wherein the means for limiting the output of the clamp circuit comprise a transistor.

15. (Currently Amended) A device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit, the voltage regulator comprising a switching device configured to bypass at least one diode responsive to the clamping threshold of the clamp circuit and to the operational or test supply voltage, such that the switching device is configured to generate generating a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump electrically coupled to the control circuit, the charge pump generating a voltage in response to the second control signal from the control circuit; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is reversibly activated to reversibly bypass the at least one of the plurality of voltage

regulation devices of the clamp circuit, thereby modifying the clamping threshold of the clamp circuit; and

wherein the voltage regulator is configured to clamp the voltage generated by the charge pump.

16. (Previously Presented) The device of Claim 15, wherein the bypass device comprises a fuse in series with a control terminal of a transistor.

17. – 24. (Canceled)

25. (Currently Amended) A device for a semiconductor device, the voltage control circuit generating an internal supply voltage within the semiconductor device, the internal supply voltage derived from an external supply voltage that varies over a range of magnitudes, the device comprising:

a clamp circuit having a plurality of voltage regulation devices, the voltage regulation devices controlling a clamping threshold of the clamp circuit, wherein the clamping circuit is configured to allow an output to track an input below a clamping maximum;

a voltage regulator electrically coupled to the clamp circuit, the voltage regulator ~~configured to clamp the internal supply voltage and~~ comprising a switching device configured to bypass at least one diode responsive to the clamping threshold of the clamp circuit and to the operational or test supply voltage, such that the switching device is configured to generate a first control signal responsive to the clamping threshold of the clamp circuit;

a control circuit electrically coupled to the voltage regulator circuit which generates a second control signal responsive to the first control signal;

a charge pump which receives the second control signal from the control circuit, the charge pump generating the internal supply voltage from the external supply voltage, the internal supply voltage varying in response to changes in the magnitude of the external supply voltage and having a magnitude greater than the magnitude of the external supply voltage by a differential magnitude responsive to the clamping threshold of the clamp circuit; and

at least one bypass device connected to at least one of the plurality of voltage regulation devices, wherein the at least one bypass device is activated following testing of the semiconductor device to bypass the at least one of the plurality of voltage regulation devices of the clamp circuit to lower the clamping threshold of the clamp circuit, the voltage regulator generating a third control signal responsive to the lowered clamping threshold of the clamp circuit to cause the charge pump to generate the internal supply voltage at an operational magnitude having a reduced differential magnitude with respect to magnitude of the external supply voltage.

26. – 29. (Cancelled)

30. (Currently Amended) The device of Claim 1, wherein the voltage regulator comprises at least one switching device configured to use the clamping threshold of the clamp circuit to clamp either the test supply voltage or the operational supply voltage the switching device comprises a transistor.

31. (Currently Amended) The device of Claim 4, wherein the voltage regulator comprises at least one switching device configured to use the clamping threshold of the clamp circuit to clamp either the test supply voltage or the operational supply voltage the switching device comprises a second transistor.

32. (Currently Amended) The device of Claim 10, wherein the means for using a voltage regulator to clamp either the test supply voltage or the operational supply voltage comprises at least one switching device configured to use a clamping threshold generated by the clamp circuit to clamp either the test supply voltage or the operational supply voltage the switching means comprises a transistor.

33. (Currently Amended) The device of Claim 15, wherein the voltage regulator comprises at least one switching device configured to use the clamping threshold of the clamp circuit to clamp the voltage generated by the charge pump the switching device comprises a transistor.

34. (Currently Amended) The device of Claim 25, wherein the voltage regulator comprises at least one switching device configured to use the clamping

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threshold of the clamp circuit to clamp the internal supply voltage the switching device comprises a transistor.